

Border collie collapse (BCC)

An exercise intolerance disorder has been recognized in Border collies and may be called Border collie collapse (BCC). This disorder has also been called exercise induced hyperthermia and "the wobbles". It is most common in dogs used for working stock but has also been seen in dogs training for agility or flyball competitions and in dogs repetitively retrieving a ball or a frisbee.

Affected dogs are normal at rest and seem healthy. They will sometimes become abnormal after five to fifteen minutes of strenuous activity, particularly in warm weather. All of the factors contributing to the tendency for an affected dog to collapse on a given day have not been determined but environmental temperature (heat), intensity of exercise and excitement seem to be important factors. Some dogs seem relatively normal while they are exercising but only show symptoms about 5 minutes after exercise is halted.

During an episode affected dogs may seem dazed and confused or may simply lose their focus. They commonly develop a stiff, stilted gait with short strides in the rear legs or all 4 legs and scuff their feet during an episode. Most dogs get wobbly with an incoordinated gait (appearing "drunk") and a few dogs stagger and stumble and actually collapse and become unable to walk. Dogs are abnormal for 5 to 30 minutes, but then recover completely with no residual lameness or muscle stiffness or discomfort.

We have performed strenuous exercise studies to try to learn more about BCC. Body temperatures are very high during an episode (often >41.7C, >107F), but not higher than those seen in unaffected dogs performing the same exercise. Complete cardiac evaluations are normal. Affected dogs have normal blood sugar, cortisol and electrolytes (sodium and potassium) before exercise and after collapse. Border collies with BCC are negative for the dynamin 1 mutation causing EIC in Labrador Retrievers.

Investigators at the University of Saskatchewan (Taylor, Shmon, Su), the University of Minnesota (Patterson, Mickelson, Minor) and the Comparative Neuromuscular Unit at the University of California San Diego (Shelton) are involved in a large-scale project to investigate this disorder. This project has involved evaluating affected dogs before and after exercise, evaluating owner-provided questionnaires and videotapes of collapse episodes and collecting DNA from affected dogs for genetic analysis. Funding is through grants from the American Border Collie Association and the Western College of Veterinary Medicine Companion Animal Health Fund and through donations received from the AKC Canine Health Foundation and numerous Border Collie/Stock Dog groups in the US and Canada.

How can you help?

We are still collecting questionnaires and DNA (EDTA blood) samples and pedigrees from Border Collies and others suspected to have BCC.

Questionnaires

If your Border collie has had episodes of exercise intolerance or collapse that may be BCC, please go to this website for the Canine and Equine Genetics Lab at the University of Minnesota:

<http://www.cvm.umn.edu/vbs/faculty/Mickelson/lab/home.html>

Click on Border Collie Collapse under Canine Research

Select the BCC questionnaire option. Fill out the online questionnaire and submit it electronically.

Blood Sample for DNA

Instructions for collecting and shipping the DNA sample (EDTA preserved blood), and forms to accompany the sample **shipped to the laboratory in Minnesota** are also available on the website above. When you send a DNA sample in from your dog to the University of Minnesota, realize that there will be no "test result" forthcoming. The DNA will be used to achieve our long term goal of identifying the genetic cause of BCC.

Video

If you have a video of your dog having an episode of collapse we would also like to have the opportunity to view that to determine if your dog's episode is typical for the disorder we are calling BCC. Send it to us electronically (sue.taylor@usask.ca) or send a CD/DVD with the video to Dr. Taylor. (Dr. Sue Taylor, Dept of Small Animal Clinical Sciences, University of Saskatchewan, 52 Campus Drive, Saskatoon, SK, Canada S7N5B4).

Are other breeds affected?

We have seen videos and questionnaires from dogs of a few breeds that have a disorder similar to or identical to what we are calling BCC in Border collies. Dogs of these breeds might have the same genetic abnormality as the affected Border collies but we will only be able to determine this once we identify the genetic cause of BCC. Until then, if you have a collapsing dog from one of these breeds feel free to contact us and provide us with a completed questionnaire, video and a DNA sample as described for Border collies. Dogs suspicious for a BCC-like disorder are: Australian Cattle dogs, Australian Kelpies, Australian Shepherds, Whippets, Shetland sheepdogs, Bearded collies, Belgian Malinois and Belgian Tervurens.

Managing an Affected Dog

Affected dogs can still live fairly normal lives but they may have to have their participation in trigger activities limited, especially in warm weather. If they do have an episode then attempts should be made to cool their body temperature to speed recovery. Until we know the cause of the episodes there is no specific treatment that we can recommend to prevent BCC. Because there is some concern that the mentation changes during episodes could represent a partial seizure, treatment (under veterinary supervision) with anticonvulsants may be warranted to see if this decreases the tendency to have episodes, but right now we have very little evidence that this will be effective.

We are happy to answer your questions and view videos of your dog if you think you might be dealing with Border collie collapse.

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Updated November 28, 2014